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## Sardar Patel University

B. Sc. (Semester – V) Examination

Date: 26-12-2020, Saturday

Time: 02:00pm – 04:00pm

Industrial Chemistry

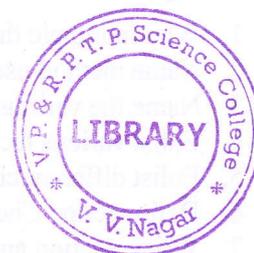
COURSE NO: US05CICH22 (Petroleum and Petroleum Products)

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following Multiple-Choice Questions. (All are compulsory) (10)

- Salt content of crude is express as \_\_\_\_\_ salt.  
A. KCl  
B.  $\text{Na}_2\text{CO}_3$   
C. NaCl  
D.  $\text{CaCl}_2$
- Girbotol process utilizes \_\_\_\_\_ for removal of  $\text{H}_2\text{S}$  and  $\text{CO}_2$  from gases.  
A. Carboxylic Acids  
B. Phenol  
C. Amides  
D. Amines
- Parallel reactors are utilized in \_\_\_\_\_ type of cracking process.  
A. Houndry Process  
B. Thermoform process  
C. FCC process  
D. Flexi Process
- p-Xylene forms complex with \_\_\_\_\_.  
A.  $\text{CHCl}_3$   
B.  $\text{CH}_3\text{Cl}$   
C.  $\text{CCl}_4$   
D.  $\text{CH}_2\text{Cl}_2$
- Udex Method uses \_\_\_\_\_ as extracting solvent.  
A. Water  
B. Ethylene Glycol  
C. Ethanol  
D. Ethylene Glycol and Water
- Iso butene can be extracted by \_\_\_\_\_.  
A. Acetone  
B. Alkali  
C. Sulphuric Acid  
D. Ethanol
- Phthalic anhydride is manufactured by \_\_\_\_\_ reaction.  
A. Reduction  
B. Oxidation  
C. Halogenations  
D. Hydrolysis
- Catalyst used for oxidation of naphthalene in phthalic anhydride manufacturing is \_\_\_\_\_.  
A.  $\text{V}_2\text{O}_5$   
B. Ni  
C. Pt  
D. Zn-Cd
- Ethylene glycol is prepared by \_\_\_\_\_ of ethylene oxide which is a \_\_\_\_\_ product of ethylene.  
A. Hydration/oxidation  
B. Hydration/reduction  
C. Hydrolysis/alkylation  
D. Hydrogenation/halogenations
- Ethylene oxide is the \_\_\_\_\_ product of ethylene.  
A. Oxidation  
B. Reduction  
C. Halogenations  
D. Hydroxylation



Q.2 Are the following statements true or false? (All are compulsory) (08)

1. According to bionic theory, formation of crude is result of temperature and pressure in presence of oxygen on sediments and rocks - True/False?
2. In a distillation tower, more separation can be achieved by increasing number of trays in the column - True/False?
3. In azeotropic separation of toluene the methanol is recovered by using water - True/False?
4. Acetonitrile is used as raw material for production of nitro fibers and nitrile rubber - True/False?
5. The reaction conditions for manufacturing of MTBE is Harsh and requires Ion exchange catalyst - True/False?
6. The extractive distillation of Butane will yield around 95% Butane - True/False.
7. Frequent recycling of catalyst is required in direct hydration for manufacturing of ethanol - True/False?
8. The uncontrolled oxidation of ethylene leads to  $\text{CO}_2$  and  $\text{H}_2\text{O}$  as products - True/False?

Q.3 Answer the following short questions (Attempt Any 10 out of 12) (20)

1. Why inorganic theory fails to explain formation of crude oil?
2. Name method used of demulsification of crude oil
3. Name the various reactions taking place in catalytic cracking
4. Enlist various techniques used for separation of petroleum distillate.
5. Enlist different chemicals derived from methane fraction.
6. Define term "Chemisorption".
7. Write reaction and its conditions for manufacturing of Phthalic anhydride.
8. Write reaction and its conditions for manufacturing of  $\text{CS}_2$ .
9. Enlist various applications of Isopropyl benzene.
10. Give reaction and its conditions for acetylene-based synthesis of vinyl acetate.
11. Write reactions for liquid phase hydration of ethylene.
12. Draw a low diagram representing manufacturing of Cumene.



Q.4 Answer the following Long questions (Attempt Any 04) (32)

1. Write a note on Construction & working of bubble cap tray.
2. Write a note on Theory of petroleum.
3. Using flow diagram, explain separation of C8 aromatic fraction using fractional crystallization.
4. Using azeotropic distillation explain separation of aromatic and non-aromatic fraction using methanol.
5. Discuss the manufacturing of "Caprolactum".
6. Write a note on "Manufacturing of Maleic anhydride".
7. Write a note on manufacturing of Butadiene.
8. Write a note on manufacturing of Vinyl Acetate.

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